

# CARRIER-CLASS PUBLIC WI-FI FOR 3G/4G OFFLOAD



The ubiquity of Wi-Fi and the proliferation of dual-mode smartphones and tablets present a major opportunity for mobile operators to offload data and video traffic from their increasingly congested 3G and 4G cellular networks, as well as to offer a subscription service for users with Wi-Fi-only devices.

The opportunity extends to virtually any venue where people congregate, including airports, hotels, restaurants, hospitals, schools, auditoriums, stadiums, and more. In other words: Just about anywhere indoors and outdoors.

Aruba's carrier-class Wi-Fi solution, used by many of the world's largest mobile operators, combines high performance and high reliability with industry-leading ease of deployment and management to support mobile operators' data offload initiatives.

Aruba's comprehensive and versatile Wi-Fi solution is purpose-built for centralized management of remote hotspots and hot zones. Deploying Wi-Fi access points (APs) is remarkably simple with Aruba's cloud-based auto-provisioning, while centralized management for multiple remote locations simplifies ongoing operation.

## THE OFFLOAD OPPORTUNITY

The amount mobile data and video traffic is exploding owing to the growth in bandwidth hungry applications. Smartphones and tablets are great for subscribers, but are creating a real problem in 3G and 4G cellular networks.

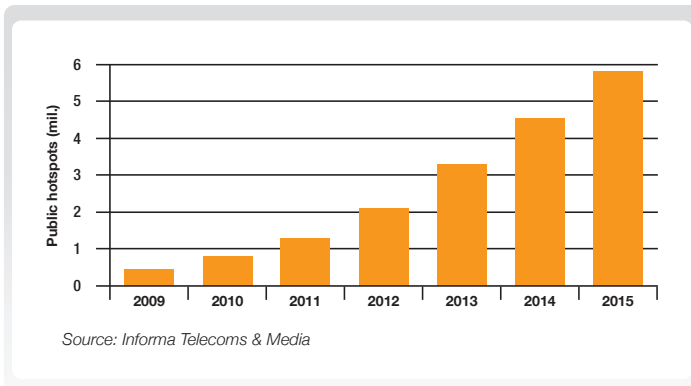
The increasingly frequent congestion is causing poor performance and service disruptions. Users call to complain about poor video quality or slow downloads. Deploying more and smaller cells is one solution to the problem, but limited and costly licensed spectrum makes this approach prohibitively expensive.

## THE ARUBA ADVANTAGE

Aruba's scalable and flexible wireless networking solution is being used by mobile operators around the globe to offload 3G/4G traffic to Wi-Fi hotspots and hot zones.

- Highly scalable, secure and resilient deployment architecture with controllerless Aruba Instant or Mobility Controllers. Scales from sites with a single AP to high density stadiums and even entire cities with unified access policy and network management.
- Aruba Activate™ for zero-touch AP provisioning, automated firmware upgrades and inventory management, provided at no cost to operators.
- Adaptive Radio Management™ technology automatically optimizes Wi-Fi client performance and ensures that APs stay clear of RF interference.
- Integrated spectrum analysis enables APs to identify all sources of RF interference.
- Policy Enforcement Firewall™ that utilizes contextual information – user, device, location, time and applications – to enforce network access policies and enable operators to deliver secure, differentiated services.
- ClearPass for granular access policy and sophisticated guest access management.
- AirWave™ for centralized monitoring and management of multivendor wired and wireless networks across multiple remote locations.
- Support for the Hotspot 2.0 and the Wi-Fi-certified Passpoint program to ensure seamless integration with the mobile operator's core network.

Mobile operators have now embraced a far more cost-effective solution: Wi-Fi. Successful deployments to offload 3G and 4G traffic have proven that a Wi-Fi network can be a carrier-class solution that is just as reliable as a cellular network, while offering substantially more capacity.



**The Wireless Broadband Alliance reports that eight of the ten largest mobile operators have already deployed public Wi-Fi hotspots, while Informa Telecoms & Media predicts mobile operators will have deployed 5.8 million such sites worldwide by 2015.**

A successful Wi-Fi offload strategy for mobile operators requires:

- Identifying and securing the optimal locations for deployment.
- Having complete visibility into and control over the Wi-Fi network.
- Providing hassle-free, secure and automatic subscriber authentication to the Wi-Fi networks.
- Delivering walled-garden and value-added services to monetize the connectivity options.
- Ensuring reliable and secure operation to deliver the best quality of experience.

Aruba's Wi-Fi offload solution meets all of these requirements, and more, enabling mobile operators to offer Wi-Fi as a profitable service.

## WI-FI AS A SERVICE

Aruba is committed to making mobile operators successful deploying and operating public Wi-Fi hotspots and hot zones. Aruba's carrier-class Wi-Fi solution provides the performance, reliability, scalability, and versatility mobile operators need to offload their 3G/4G networks.

From the smallest hotspots in quick-serve restaurants to the largest hot zones in airports and even entire cities, Wi-Fi access solutions from Aruba are the industry's easiest to provision and manage, and include a rich assortment of value-added services to maximize the profit potential.

## Simplified deployment and provisioning

Controllerless Aruba Instant™ APs with Aruba Activate™ zero-touch provisioning dramatically reduce deployment time, and automate firmware upgrades and inventory management. Aruba Instant is the first controllerless Wi-Fi solution capable of delivering the simplicity and dependability mobile operators need.

With Aruba Activate, when a hotspot's single Instant AP is powered up, it is provisioned and configured automatically. For hot zones requiring multiple APs, the first one installed automatically distributes the network configuration over the air to all other APs. The entire process takes only about five minutes, and there are no ongoing fees to pay.

Larger hot zones, including those outdoors, can take advantage of Aruba's large assortment of APs, and remotely-managed Mobility Controllers and Mobility Access Switches. With a choice of entry-level and high-performance indoor models, as well as outdoor models backhauled via a resilient wireless mesh network, Aruba has an AP suitable for any need.

## Highest possible performance

With Aruba's Adaptive Radio Management™ (ARM) technology, mobile operators get maximum performance with minimal or no manual intervention. ARM™ automatically and continuously ensures that every Wi-Fi device associates with the optimal AP at its optimal power setting and on the optimal channel, making ARM the most effective RF management technology available today.

ARM's airtime fairness algorithms ensure equal access for all subscribers, while airtime performance protection prevents slower clients from monopolizing available bandwidth. Together these capabilities maximize the quality of experience for all subscribers, all of the time.

Aruba has the only wireless infrastructure with the noise-, client- and application-awareness needed to optimize Wi-Fi performance without any on-site intervention. This enables mobile operators to focus instead on increasing revenue by offering more value-added services and applications.

## Value-added services for incremental revenue

The Aruba ClearPass Guest visitor management can be branded and customized, and includes support for advertising, credit card billing, business analytics and security services. ClearPass Guest gives operators the opportunity to provide advertising, deliver coupons or special offers, collect demographic information and deliver targeted content – all of which are useful in monetizing Wi-Fi.

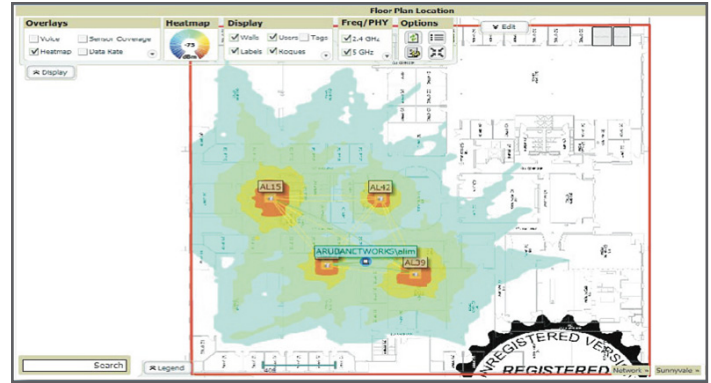
Aruba's integrated Policy Enforcement Firewall™ provides both the stateful protection and context awareness needed to enable mobile operators to offer secure, differentiated services based on user role, type of subscription, device, application or location. The firewall constantly monitors users and their devices, and uses this contextual information to enforce all access policies without requiring complicated network re-engineering.

### Comprehensive centralized network management

Aruba AirWave™ network management provides full visibility of and complete control over the entire multivendor wired and wireless infrastructure from the mobile operator’s network operations center.

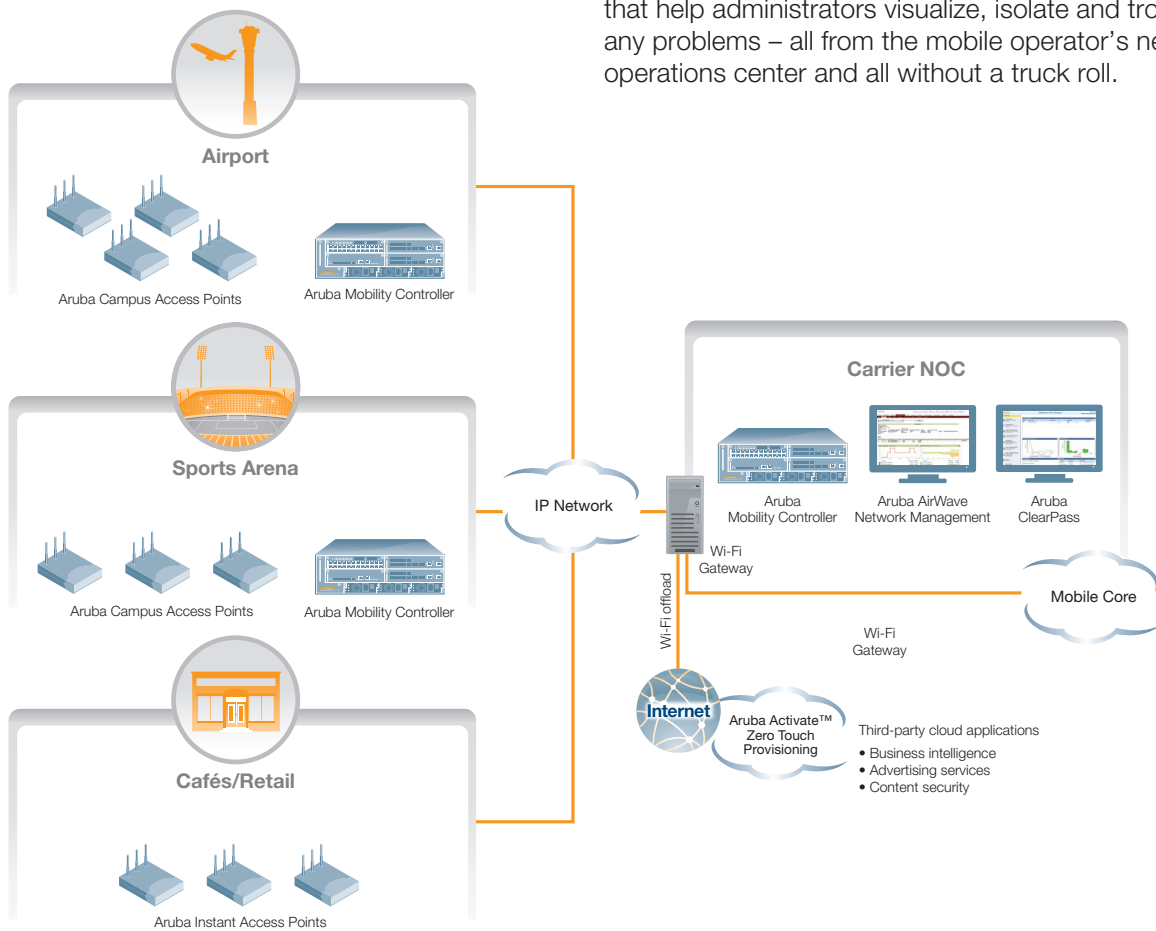
With AirWave, mobile operators are able to manage everything that affects service quality across multiple remote locations – from the wired LAN connecting APs to which devices are connecting via which channels to which APs.

AirWave also streamlines network operations with user location and mapping, real-time monitoring, proactive alerts, historical reports, and advanced remote troubleshooting capabilities.



Aruba’s VisualRF™ provides network operations staff with customizable, real-time view showing signal quality, data rates and device locations.

Aruba even makes it easy to centrally troubleshoot RF interference in the unlicensed spectrum. The Aruba RFProtect™ Spectrum Analyzer continuously scans and analyzes the full spectrum, and generates spectrograms that help administrators visualize, isolate and troubleshoot any problems – all from the mobile operator’s network operations center and all without a truck roll.



Aruba offers a complete edge-to-core solution for offloading 3G/4G networks with high-performance Wi-Fi hotspots and hot zones.

## Seamless integration to the mobile core

Aruba's carrier-class Wi-Fi solution provides seamless integration with the operator's mobile core for authentication, unified policy management and secure delivery of walled-garden services.

Communications between the Wi-Fi infrastructure and Wi-Fi gateways that interface with mobile core elements are secured via GRE/IPsec tunnels. Aruba has strategic partnerships with leading Wi-Fi gateway vendors and authentication/policy management solutions.

The end-to-end carrier-grade Wi-Fi solution leverages Aruba's core capabilities including the ability to gain real-time information on the RF network. This enables operators to design and deliver secure, intelligent and policy-driven traffic offload.

## CONCLUSION

Most mobile operators are already participating in the land grab for the best Wi-Fi hotspot and hot zone venues, and Aruba has both the industry-leading technology and proven best practices to maximize success in this ongoing endeavor. Aruba's solutions provide operators complete visibility into and control over the Wi-Fi network, as well as a platform to deliver and monetize value-added services.

Simple deployment with auto-provisioning. Comprehensive centralized management. The flexibility and scalability to meet the needs in any venue – large or small. Aruba Networks is the perfect partner for offloading 3G/4G traffic onto Wi-Fi hotspots and hot zones.

[www.arubanetworks.com/serviceprovider](http://www.arubanetworks.com/serviceprovider)



**Wireless**  
Broadband Alliance

## SEAMLESS CONNECTIVITY

To promote totally seamless connectivity for subscribers, the Wi-Fi Alliance is working with the Wireless Broadband Alliance to specify and certify interoperability from the user devices to the carrier core under the Hotspot 2.0 Wi-Fi-certified Passpoint and next-generation hotspot initiatives. Aruba has been involved from the outset in these efforts and is participating in several NGH trials with operators globally.



[www.arubanetworks.com](http://www.arubanetworks.com)

1344 Crossman Avenue, Sunnyvale, CA 94089

1-866-55-ARUBA | Tel. +1 408.227.4500 | Fax. +1 408.227.4550 | [info@arubanetworks.com](mailto:info@arubanetworks.com)